

INDIANA TRAFFIC SAFETY FACTS

CHILDREN 2017



INDIANA UNIVERSITY
PUBLIC POLICY INSTITUTE

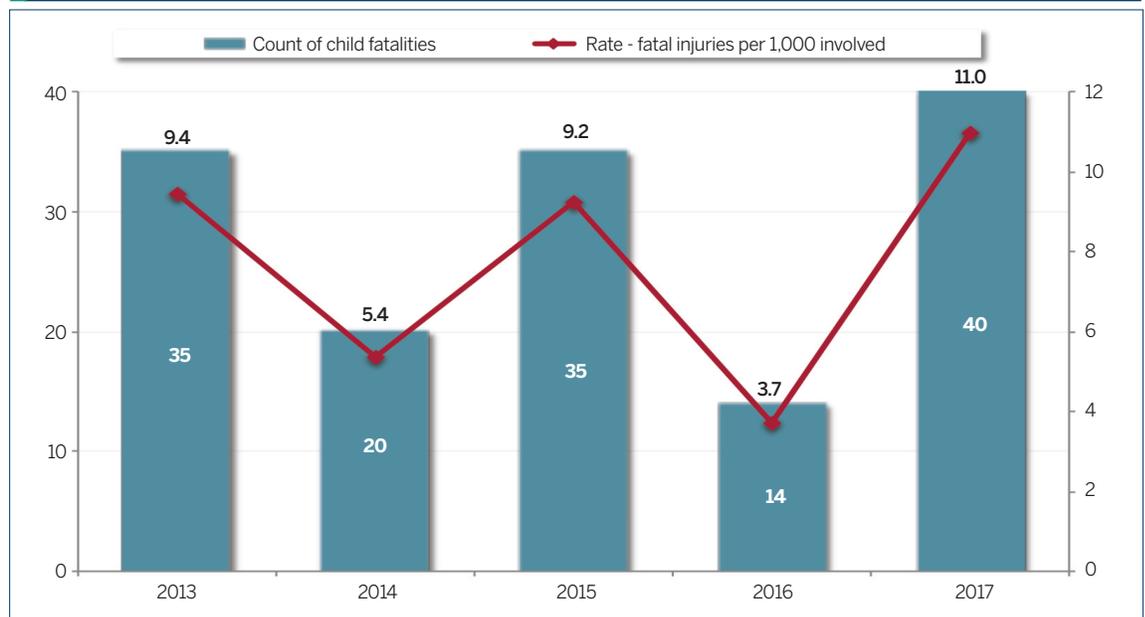
IN 2017:

- Only 1 percent of children injured in crashes in the state were killed (40 fatalities).
- The overall rate of restraint usage among child occupants and drivers involved in Indiana crashes occurring in passenger vehicles was 90 percent.
- Restraint use was lowest (86 percent) among the 13- to 14- year-old group.
- 199 child pedestrians were injured in collisions in Indiana in 2017; 6 were killed and 96 suffered incapacitating injuries.
- In 2017, 124 pedacyclists aged 14 years and younger were injured in Indiana crashes; 3 were killed and 54 sustained incapacitating injuries.
- 70 children were involved in alcohol-impaired traffic collisions, which involved a driver with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL).

From 2013 to 2017, the number of children killed in Indiana traffic collisions increased 3 percent annually. Recent crash data shows the total number of child fatalities in Indiana traffic collisions rose from 14 in 2015 to 40 in 2017 (Figure 1).¹ This fact sheet summarizes information on traffic collisions involving children in Indiana between 2013 and 2017. It examines

general trends, injury status by age group, restraint usage and seating position, alcohol-related crashes, and geographical analysis by county. Indiana collision data come from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018.

Figure 1. Child fatalities and fatal injury rates in Indiana collisions, per 1,000 involved, 2013-2017



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

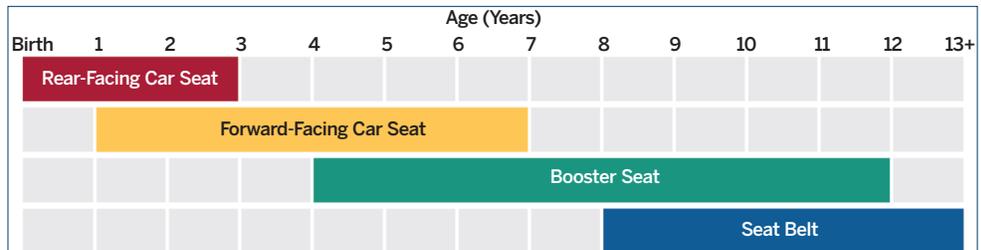
¹Due to possible ARIES reporting errors designating very young children as *drivers*, this fact sheet's analysis does not include children aged 7 years old or younger who were categorized as *drivers* or *animal-drawn vehicle operators*.

In partnership with:



Research has shown that the use of child restraints, including child safety seats and lap/shoulder belts, reduces the risk of fatal and serious injuries. NHTSA strongly recommends that child occupants progress through four stages of restraint usage from birth to adulthood (Figure 2). Current Indiana child passenger restraint law requires all child occupants ages 15 and under to be properly restrained in a child restraint device or seat belt in all seating positions in all vehicles.

Figure 2. Car Seat Recommendations for Children



Select a car seat based on your child's age and size, choose a seat that fits in your vehicle, and use it every time.

- Always refer to your specific car seat manufacturer's instructions (check height and weight limits) and read the vehicle owner's manual on how to install the car seat using the seat belt or lower anchors and a tether, if available.
- To maximize safety, keep your child in the car seat for as long as possible, as long as the child fits within the manufacturer's height and weight requirements.
- Keep your child in the back seat at least through age 12.

Rear-Facing Car Seat

Birth – 12 Months

Your child under age 1 should always ride in a rear-facing car seat. There are different types of rear-facing car seats:

- Infant-only seats can only be used rear-facing.
- Convertible and All-in-One car seats typically have higher height and weight limits for the rear-facing position, allowing you to keep your child rear-facing for a longer period of time.



1 – 3 Years

Keep your child rear-facing as long as possible. It's the best way to keep him or her safe. Your child should remain in a rear-facing car seat until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the rear-facing car seat, your child is ready to travel in a forward-facing car seat with a harness and tether.



Forward-Facing Car Seat

1 - 3 Years

Keep your child rear-facing as long as possible. It's the best way to keep him or her safe. Your child should remain in a rear-facing car seat until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the rear-facing car seat, your child is ready to travel in a forward-facing car seat with a harness and tether.



4 - 7 Years

Keep your child in a forward-facing car seat with a harness and tether until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the forward-facing car seat with a harness, it's time to travel in a booster seat, but still in the back seat.



Booster Seat

4 - 7 Years

Keep your child in a forward-facing car seat with a harness and tether until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the forward-facing car seat with a harness, it's time to travel in a booster seat, but still in the back seat.



8 - 12 Years

Keep your child in a booster seat until he or she is big enough to fit in a seat belt properly. For a seat belt to fit properly the lap belt must lie snugly across the upper thighs, not the stomach. The shoulder belt should lie snug across the shoulder and chest and not cross the neck or face. Remember: your child should still ride in the back seat because it's safer there.



Seat Belt

8 - 12 Years

Keep your child in a booster seat until he or she is big enough to fit in a seat belt properly. For a seat belt to fit properly the lap belt must lie snugly across the upper thighs, not the stomach. The shoulder belt should lie snug across the shoulder and chest and not cross the neck or face. Remember: your child should still ride in the back seat because it's safer there.



Source: NHTSA, <https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/carseatrecommendationsforchildren.pdf>, current as of August 29, 2018

GENERAL TRENDS

The number of children experiencing fatal injuries rose from a five-year low of 14 in 2016 (which was an exceptionally low year, based on 2013-2015 counts) to 40 in 2017. Incapacitating injuries experienced by children decreased slightly between 2016 and 2017, from 1,350 to 1,236 (Table 1).

Deaths in every children's age category except 1 to 3 years increased substantially in 2017. Fatalities among the 4- to 7-year-old age group represent 33 percent of all children killed in Indiana collisions in 2017. As shown in Figure 1, the rate of fatal injuries per 1,000 children involved in crashes increased from 3.7 in 2016 to 11.0 in 2017.

Table 1. Children involved in Indiana traffic collisions, by injury status and age group, 2013-2017

	2013		2014		2015		2016		2017		Annual rate of change	
	Count	% Total	2016-2017	2013-17								
Fatal	35	100.0%	20	100.0%	35	100.0%	14	100.0%	40	100.0%	185.7%	3.4%
Less than 1 year old	2	5.7%	3	15.0%	2	5.7%	0	6.7%	6	15.0%	na	31.6%
1 to 3 years old	8	22.9%	1	5.0%	6	17.1%	7	46.7%	5	12.5%	-28.6%	-11.1%
4 to 7 years old	8	22.9%	4	20.0%	7	20.0%	1	6.7%	13	32.5%	1200.0%	12.9%
8 to 12 years old	11	31.4%	7	35.0%	15	42.9%	4	26.7%	8	20.0%	100.0%	-7.7%
13 to 14 years old	6	17.1%	5	25.0%	5	14.3%	2	13.3%	8	20.0%	300.0%	7.5%
Incapacitating	193	100.0%	305	100.0%	1,204	100.0%	1,350	100.0%	1,236	100.0%	-8.4%	59.1%
Less than 1 year old	3	3.8%	17	4.8%	49	5.0%	59	4.3%	71	5.7%	20.3%	120.6%
1 to 3 years old	28	12.9%	35	13.7%	202	14.7%	201	14.4%	210	17.0%	4.5%	65.5%
4 to 7 years old	35	26.0%	68	25.2%	284	24.7%	307	24.3%	291	23.5%	-5.2%	69.8%
8 to 12 years old	74	36.2%	105	35.1%	439	37.0%	514	39.0%	437	35.4%	-15.0%	55.9%
13 to 14 years old	53	21.1%	80	21.1%	230	18.6%	269	18.0%	227	18.4%	-15.6%	43.9%
Non-incapacitating/Other	3,166	100.0%	3,027	100.0%	2,245	100.0%	2,153	100.0%	2,132	100.0%	-1.0%	-9.4%
Less than 1 year old	125	3.9%	142	4.7%	122	5.4%	94	4.4%	114	5.3%	21.3%	-2.3%
1 to 3 years old	404	12.8%	422	13.9%	304	13.5%	302	14.0%	254	11.9%	-15.9%	-11.0%
4 to 7 years old	840	26.5%	773	25.5%	568	25.3%	543	25.2%	551	25.8%	1.5%	-10.0%
8 to 12 years old	1,142	36.1%	1,066	35.2%	838	37.3%	851	39.5%	832	39.0%	-2.2%	-7.6%
13 to 14 years old	655	20.7%	624	20.6%	413	18.4%	363	16.9%	381	17.9%	5.0%	-12.7%
Not injured	315	100.0%	363	100.0%	308	100.0%	232	100.0%	232	100.0%	0.0%	-7.4%
Less than 1 year old	11	3.5%	5	1.4%	5	1.6%	13	5.6%	15	6.5%	15.4%	8.1%
1 to 3 years old	7	2.2%	7	1.9%	9	2.9%	20	8.7%	14	6.0%	-30.0%	18.9%
4 to 7 years old	16	5.1%	18	5.0%	31	10.1%	26	11.3%	25	10.8%	-3.8%	11.8%
8 to 12 years old	110	34.9%	58	16.0%	94	30.5%	78	33.8%	78	33.6%	0.0%	-8.2%
13 to 14 years old	171	54.3%	275	75.8%	169	54.9%	95	40.7%	100	43.1%	5.3%	-12.6%

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

Notes:

- 1) Includes individuals identified as *drivers, injured occupants, pedestrians, and pedalcyclists* and in the *8 to 14 year old* age group, *animal-drawn vehicle operators*.
- 2) The *less than 1, 1 to 3, and 4 to 7 year old* age groups exclude data records coded as driver or animal drawn vehicle operator, due to unavailable or invalid age reporting. Unknown age or birthdate often result in age assignment in the ARIES database that is not an accurate value of driver age.
- 3) *Non-incapacitating/Other* injuries include those injuries reported as *non-incapacitating* or possible and *refused or unknown*.
- 4) *Not injured* definition included at end of report.
- 5) The most recent ARIES upgrade added a clarification to reporting officers on the definition of *incapacitating* injuries criteria to include "transported from scene for treatment"; therefore, recent increases in incapacitating injuries should be interpreted with caution.

Based on 2016 Indiana child population estimates (Table 2), both the 8- to 12-year-old and 13- to 14-year old age groups are over-represented among child injuries—8- to 12-year-old children represent 34 percent of the Indiana child population but comprised 38 percent of child injuries in 2017; and 13- to 14-year old children represent 14 percent of the state’s child population but accounted for 18 percent of child injuries. This 13- to 14-year-old age group represented the highest injury rate (348 per 100,000 population) among the five age groups. The lowest injury rate (185 per 100,000 population) was among the less than 1-year-old age group.

Table 2. Indiana child population estimates (2016) and traffic injuries (2017)

Age group	Estimated IN population	Share of IN child population	2017 total injuries	Share of IN child injuries	2017 injury rate per 100K
Less than 1 year old	83,679	6.4%	191	5.6%	228.3
1 to 3 years old	253,739	19.5%	469	13.8%	184.8
4 to 7 years old	340,914	26.2%	855	25.1%	250.8
8 to 12 years old	444,865	34.2%	1,277	37.5%	287.1
13 to 14 years old	177,112	13.6%	616	18.1%	347.8
Total	1,300,309	100.0%	3,408	100.0%	262.1

Sources: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018; U.S. Census Bureau

Notes:

- 1) The most recent population estimates available by age are for 2016.
- 2) Total injuries are sum of children with *fatal*, *incapacitating*, *non-incapacitating*, *possible* and *other* injuries. Excludes individuals classified as *not injured*.
- 3) Total injuries for less than 1, 1 to 3, and 4 to 7 year old age group exclude individuals classified as *driver* or *animal-drawn vehical operator*.

Table 3. Children killed or injured in Indiana traffic collisions by injury status and person type, 2013-2017

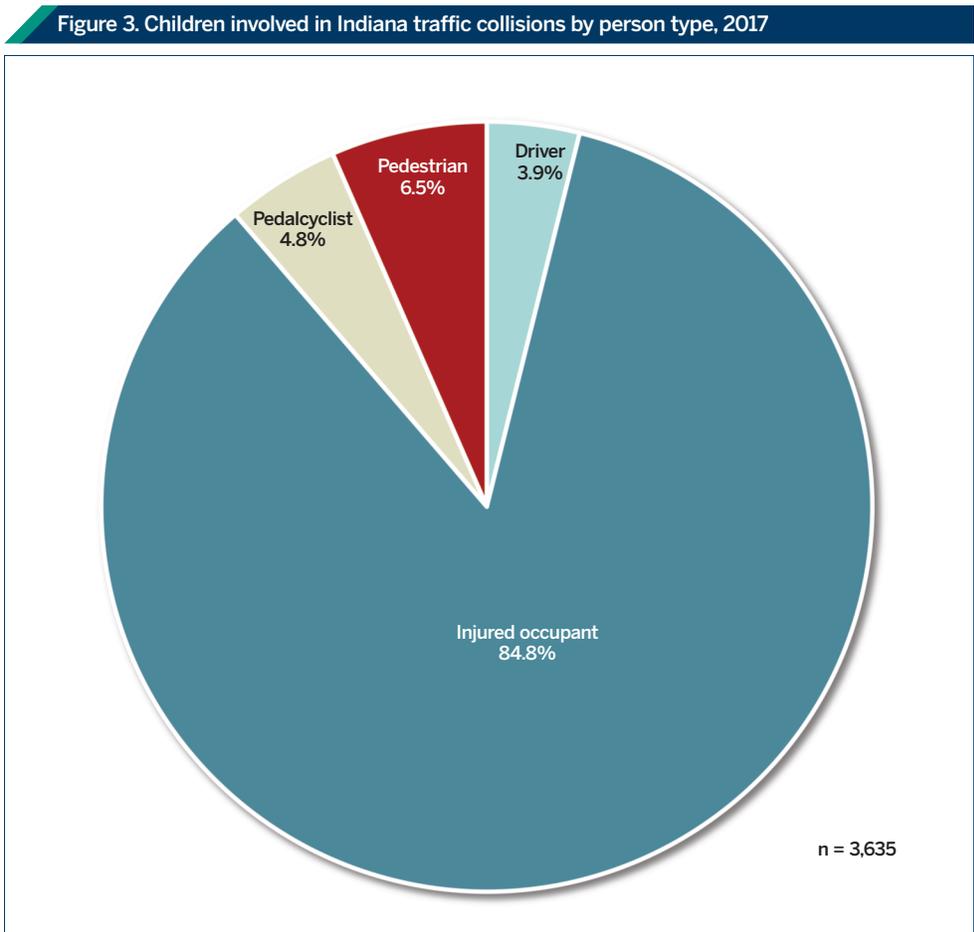
	2013		2014		2015		2016		2017		Annual rate of change	
	Count	% Total	2016-2017	2013-17								
Fatal	35	100.0%	20	100.0%	35	100.0%	14	100.0%	40	100.0%	185.7%	3.4%
Driver	2	5.7%	2	10.0%	0	0.0%	0	0.0%	1	2.5%	na	-15.9%
Injured occupant	25	71.4%	11	55.0%	25	71.4%	11	78.6%	30	75.0%	172.7%	4.7%
Pedalcyclist	2	5.7%	3	15.0%	1	2.9%	1	7.1%	3	7.5%	200.0%	na
Pedestrian	6	17.1%	4	20.0%	9	25.7%	2	14.3%	6	15.0%	200.0%	0.0%
Incapacitating	193	100.0%	305	100.0%	1,203	100.0%	1,348	100.0%	1,235	100.0%	-8.4%	59.0%
Driver	6	3.1%	7	2.3%	19	1.6%	20	1.5%	26	2.1%	30.0%	44.3%
Injured occupant	121	62.7%	237	77.7%	1022	85.0%	1,157	85.8%	1,059	85.7%	13.2%	72.0%
Pedalcyclist	20	10.4%	21	6.9%	68	5.7%	50	3.7%	54	4.4%	-26.5%	28.2%
Pedestrian	46	23.8%	40	13.1%	94	7.8%	121	9.0%	96	7.8%	-20.7%	20.2%
Non-incapacitating/Other	3,166	100.0%	3,024	100.0%	2,243	100.0%	2,152	100.0%	2,131	100.0%	-1.0%	-9.4%
Driver	55	1.7%	48	1.6%	21	0.9%	20	0.9%	22	1.0%	10.0%	-20.5%
Injured occupant	2,708	85.5%	2,631	87.0%	1,981	88.3%	1,921	89.3%	1,936	90.8%	0.8%	-8.0%
Pedalcyclist	170	5.4%	149	4.9%	111	4.9%	85	3.9%	72	3.4%	-15.3%	-19.3%
Pedestrian	233	7.4%	196	6.5%	130	5.8%	126	5.9%	101	4.7%	-19.8%	-18.9%

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

Notes:

- 1) Excludes animal-drawn vehicle operators.
- 2) Injuries for less than 1, 1 to 3, and 4 to 7 year old age group exclude individuals classified as *drivers*.
- 3) *Non-incapacitating/Other* injuries include those injuries reported as *non-incapacitating* or *possible* and *refused* or *unknown*.
- 4) The most recent ARIES upgrade added a clarification to reporting officers on the definition of *incapacitating* injuries criteria to include “transported from scene for treatment”; therefore, recent increases in incapacitating injuries should be interpreted with caution.

The number of children killed or injured in traffic collisions by person type (*drivers, vehicle occupants, pedestrians, and pedalcyclists*) is depicted in Table 3. In 2017, incapacitating injuries (1,235) accounted for 36 percent of all child traffic injuries (calculated from Table 3). Between 2016 and 2017, the number of fatalities among child occupants increased by 186 percent, from 14 to 40. The number of child *pedestrian* fatalities also rose from 1 to 3. Figure 3 illustrates the proportion of children involved in crashes by person type. Injured occupants account for 85 percent of children involved in Indiana collisions.



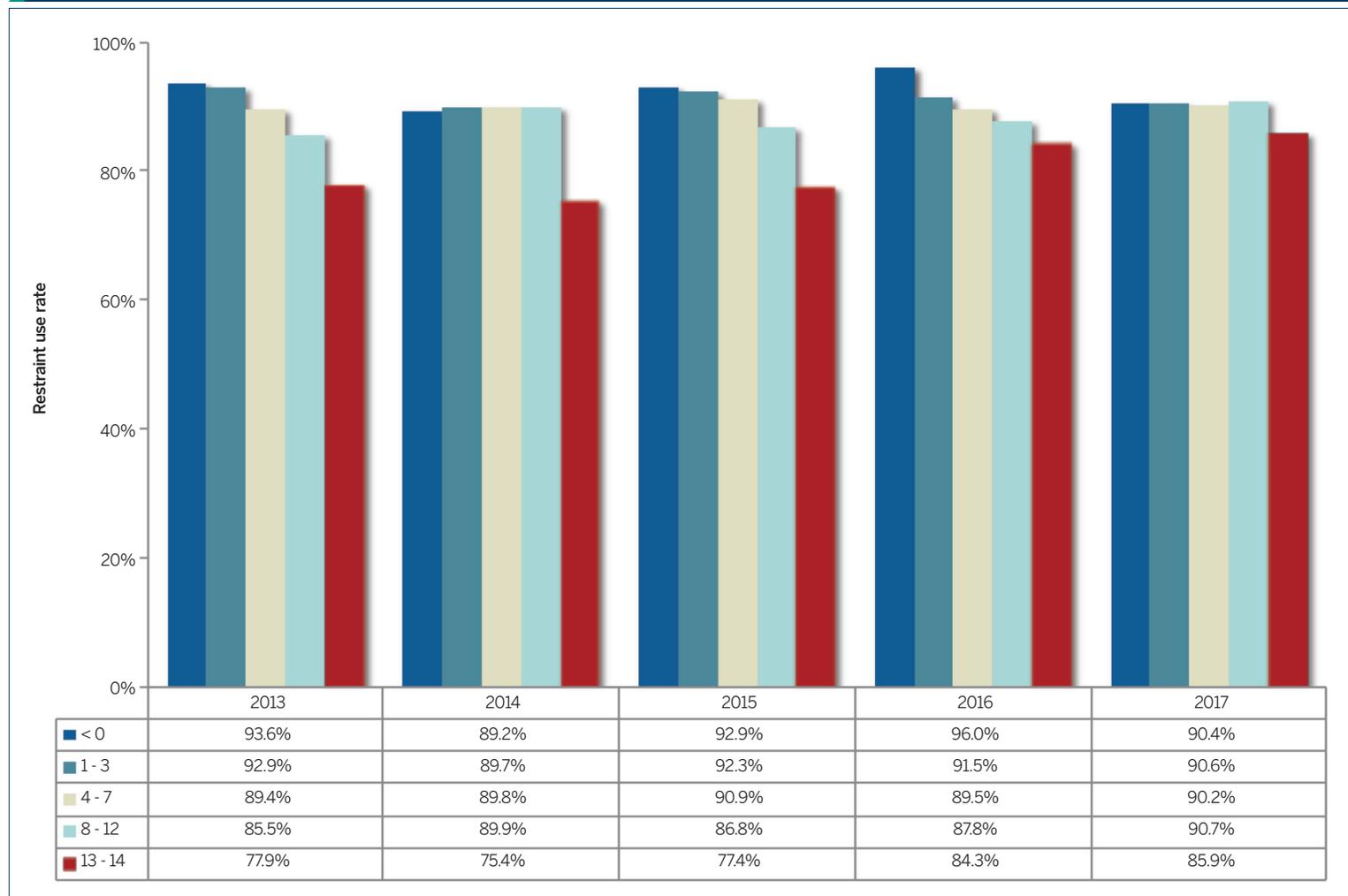
Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018
Note: Excludes animal-drawn vehicle operators

RESTRAINT USE

Restraint use rates among children in traffic collisions tend to decline as children get older (Figure 4). In 2017, the 13- to 14-year-old age group had

the lowest rate of restraint use (86 percent). Between 2013 and 2017, this age group exhibited rates of restraint use consistently lower than all other age groups. The highest rate of restraint use over the five-year period was 96 percent among children *less than 1-year-old* in 2016.

Figure 4. Restraint use among children involved in Indiana traffic collisions, by age group, 2013-2017



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

Notes:

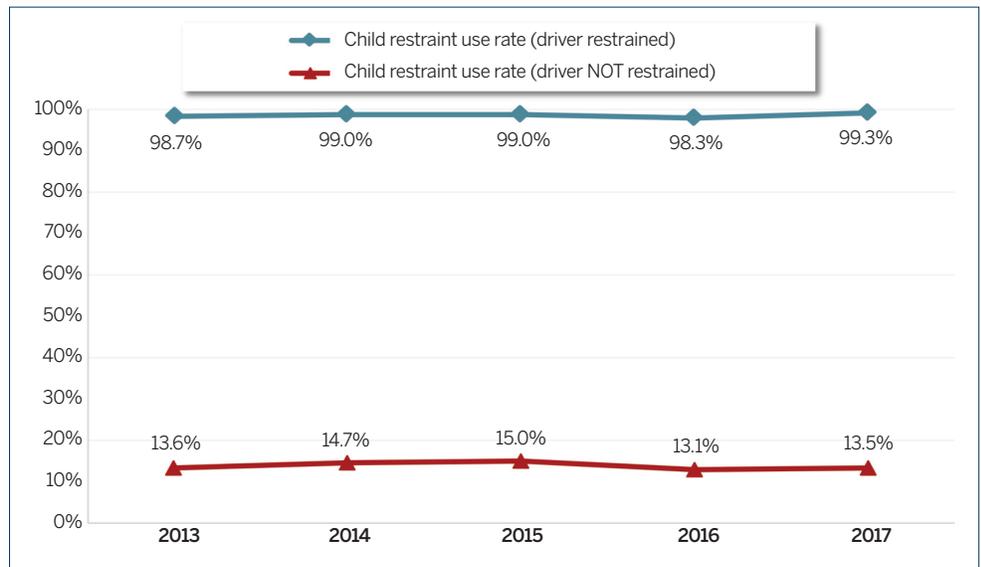
- 1) Restraint use rates are calculated based on individuals identified as *injured occupant* or *driver* where restraint use was known.
- 2) *Unrestrained* and *unknown* restraint use codes are included in totals for restraint use rate calculations.
- 3) Restraint use rates are limited to those occurring in passenger vehicles (defined as *passenger cars*, *pickup trucks*, *sport utility vehicles*, and *vans*).

Figure 5 illustrates restraint use rates among child occupants in traffic collisions based on whether their respective drivers were restrained or not. Based on known restraint use, between 2013 and 2017, over 98 percent of children were properly restrained when their drivers were restrained. When drivers were unrestrained, only 13 to 15 percent of child occupants were properly restrained over the five-year period.

ALCOHOL-IMPAIRED COLLISIONS

In 2017, 70 children were involved in alcohol-impaired traffic collisions (Figure 6), which involved a driver with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL). The number of children involved in alcohol-impaired collisions increased from 78 in 2013 to 90 in 2016. Over the five-year period, the rate of child involvement in alcohol-impaired collisions peaked in 2016 at 24 per 1,000 involved.

Figure 5. Restraint use among child occupants involved in Indiana collisions, by driver restraint use, 2013-2017

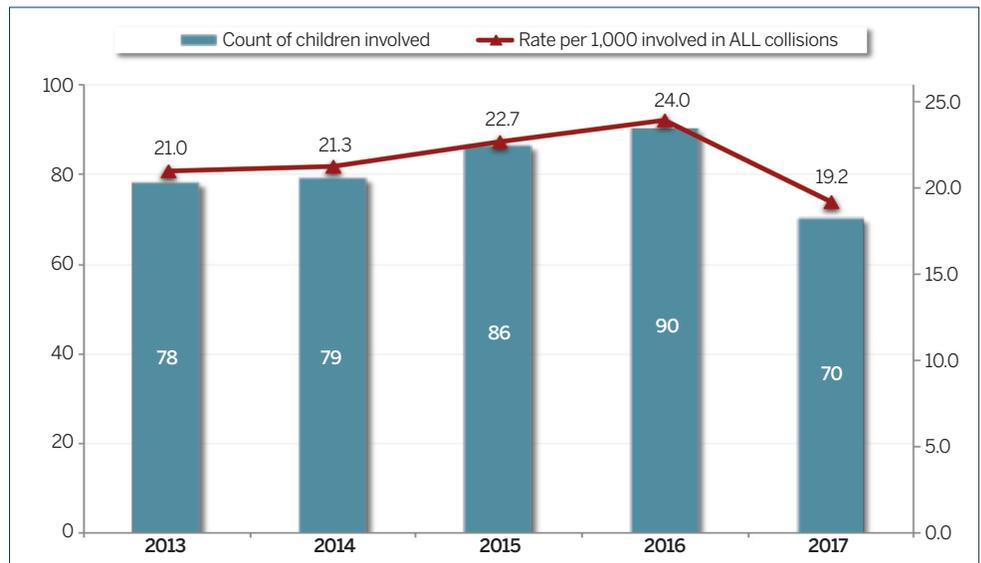


Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

Notes:

- 1) Restraint use rates are limited to those occurring in passenger vehicles (defined as *passenger cars, pickup trucks, sport utility vehicles, and vans*).
- 2) Includes individuals identified as *drivers and injured occupants*.

Figure 6. Children involved in Indiana alcohol-impaired collisions, 2013-2017

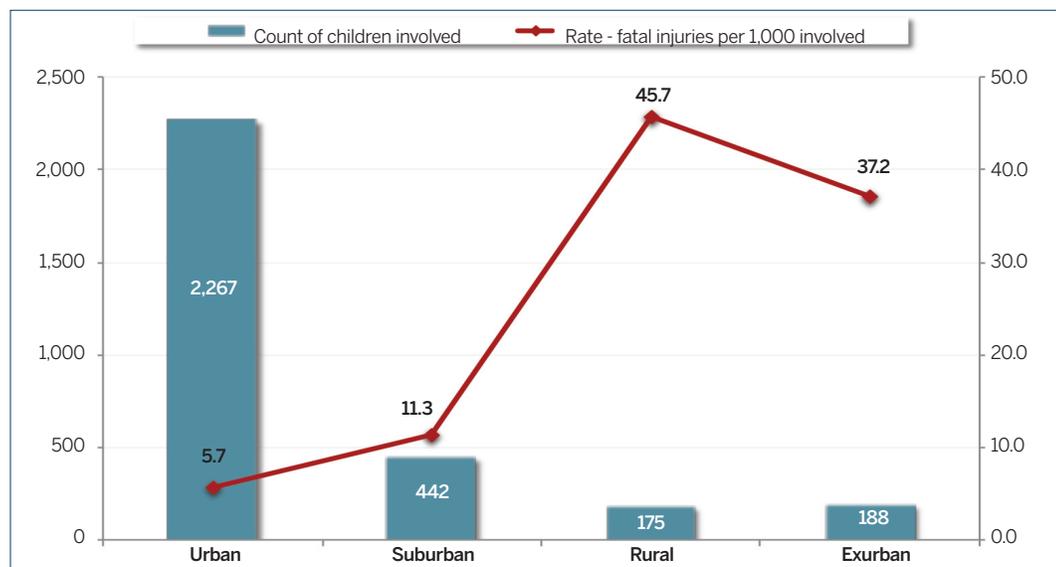


Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

GEOGRAPHY OF TRAFFIC INJURIES

In 2017, the fatal injury rate per 1,000 children involved in Indiana was lowest in urban (5.7 per 1,000) but higher in suburban (11.3), rural (37.2), and exurban (45.7) locales (Figure 7). The map on page 9 illustrates rates of Indiana child traffic injuries and fatalities for children aged less-than-one to 14 years of age by county. The median traffic injury/fatality rate per 1,000 for children 14 and younger was 2.1.

Figure 7. Children involved in Indiana collisions by Census locale, 2017



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

DEFINITIONS

Alcohol-impaired collision: A collision is considered *alcohol-impaired* when any vehicle driver involved has a BAC test result at or above 0.08 g/dL.

Annual rate of change (ARC) is the rate that a beginning value must increase/decrease each period (e.g. month, quarter, year) in a time series to arrive at the ending value in the time series. ARC is a "smoothed" rate of change because it measures change in a variable as if the change occurred at a steady rate each period with compounding. For example, to measure change in a variable from 2013 to 2017, it is calculated as $(\text{Value in 2017} / \text{Value in 2013})^{1/4} - 1$.

Non-fatal injury includes *incapacitating, non-incapacitating, possible, not reported, refused (treatment)* and *unknown* injury categories.

Not injured status includes individuals involved in collisions reported as null values in the injury status code field. NOTE: The *not injured* category in ARIES should include only uninjured drivers; nonetheless, vehicle occupants are sometimes reported as *not injured* on the crash report completed by the investigating officer.

Restraint use - Vehicle occupants injured in Indiana collisions are counted as having been restrained when the investigating officer selects any one of the following passenger vehicle safety equipment categories on the Indiana Crash Report: (1) *lap belt only*; (2) *harness*; (3) *airbag deployed and harness*; (4) *child restraint*; or (5) *lap and harness*.

REFERENCE

National Highway Traffic Safety Administration. (2016, September). Car Seat Recommendations for Children. (<https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/carseatrecommendationsforchildren.pdf>)

DATA SOURCES

Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018.

U.S. Census Bureau, Annual Estimates of the Resident Population by Single-Year of Age and Sex for the United States and States (2016), provided by the Indiana Business Research Center, Indiana University.

This publication was prepared on behalf of the Indiana Criminal Justice Institute (ICJI) by the Indiana University Public Policy Institute (PPI). Please direct any questions concerning data in this document to ICJI at 317-232-1233.

This publication is one of a series of publications that form the analytical foundation of traffic safety program planning and design in the state of Indiana. Funding for these publications is provided by ICJI and the National Highway Traffic Safety Administration.

An electronic copy of this document can be accessed via the PPI website (<http://trafficsafety.iupui.edu>), the ICJI website (www.in.gov/cji/), or you may contact the PPI at 317-278-1346.

Traffic Safety Project

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic collisions. To help in the policy-making process, the Indiana University Public Policy Institute collaborates each year with the Indiana Criminal Justice Institute to analyze vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the twelfth year of this partnership. Research findings are summarized in a series of publications on various aspects of traffic collisions, including alcohol-related crashes, commercial vehicles, dangerous driving, child passenger safety, motorcycles, occupant protection, and drivers. An additional publication provides detailed information for each county and municipality. These publications serve as the analytical foundation of traffic safety program planning and design in Indiana.

Indiana collision data are obtained from Indiana Crash Reports, as completed by law enforcement officers. Crash reports for all Indiana collisions are entered electronically through ARIES. Collision trends as reported in these publications incorporate the effects of changes to data elements on the Crash Report, agency-specific enforcement policy changes, re-engineered roadways, driver safety education programs, and other unspecified effects. A collision produces three levels of data: collision, unit (vehicles), and individual. For this reason, readers should pay particular attention to the wording of statements about the data to avoid misinterpretations. If you have questions regarding trends or unexpected results, please contact the Indiana Criminal Justice Institute, Traffic Safety Division for more information.

The Indiana Criminal Justice Institute

Guided by a Board of Trustees representing all components of Indiana's criminal and juvenile justice systems, the Indiana Criminal Justice Institute serves as the state's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. ICJI develops long-range strategies for the effective administration of Indiana's criminal and juvenile justice systems and administers federal and state funds to carry out these strategies.

Indiana University Public Policy Institute

The IU Public Policy Institute delivers unbiased research and data-driven, objective, expert analysis to help public, private and nonprofit sectors make important decisions that directly impact quality of life in Indiana. Using the knowledge and expertise of our staff and faculty, we provide research and analysis that is free of political and ideological bias. A multidisciplinary institute within the Indiana University School of Public and Environmental Affairs (SPEA), our efforts also support the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

The National Highway Traffic Safety Administration (NHTSA)

NHTSA provides leadership to the motor vehicle and highway safety community through the development of innovative approaches to reducing motor vehicle crashes and injuries. The mission of NHTSA is to save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity.



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